ABSTRACT

A system is provided for increasing the number of users capable of communicating over a wireless network to permit multiple users to transmit information simultaneously on the same channel or frequency in which a Viterbi decoder-based signal separation system is used to pull apart or uncorrupt the otherwise interfering signals on the channel. In one embodiment, two users are assigned to the same channel, with a joint parameter estimation pre-processor being utilized to provide an estimation of the power, time and frequency offsets and phase of the incoming signals. The joint parameters estimated by the parameter estimation unit are applied to a signal separator which recovers and pulls apart the two signals. The subject system is capable of accommodating more than two simultaneously transmitted signals to provide signal packing over existing channels without requiring new waveforms through the utilization of stripping techniques and tail chopping techniques so as to minimize the computational load involved in separating the signals.